REMARKS

This amendment is in response to the Official Action mailed May 19, 2005.

In the present paper, Applicants have amended claim 42, to correct an apparent clerical error. Claims 20-46 are now presented for the Examiner's consideration in view of the following remarks.

Double Patenting

The Examiner has rejected claims 20-25, 31, 33-37, 39 and 41 under the judicially-created doctrine of obviousness-type double patenting. Applicants have filed herewith a terminal disclaimer and associated fee in compliance with 37 C.F.R. § 1.321(c) and submit that that rejection is thereby overcome. Those claims are otherwise allowable, and Applicants therefore submit that claims 20-25, 31, 33-37, 39 and 41 are now in condition for allowance.

The Application

The present invention provides an accurate technique and apparatus for finding a fault in an underground conveyance sheath that is causing a locating tone to leak to ground. The invention operates by measuring a voltage differential between a reference voltage and a voltage of a probe in proximity with the conveyance, in electrical contact with the sheath through ground water or a conducting gel. In a region where the conveyance sheath is intact, the locating tone voltage does not affect the voltage differential. Where there is a fault in the sheath causing current leakage from an internal conductor to the medium, however, that voltage diffential changes. In that way, the fault is detected.

In one exemplary embodiment claimed in claim 26 of the present application, an apparatus is provided for locating an insulation fault on a cable including a conductor carrying a current. The apparatus includes at least one voltage probe adapted to be positioned adjacent the cable and displaced along the cable, a voltage source for applying between approximately 80 and 100 volts to the conductor, and a voltage comparator electrically connected to the at least one voltage probe for detecting an insulation fault when the voltage probe is positioned adjacent the fault.

The Examiner has rejected claims 26-30, 32, 38, 40 and 42-46 under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 5,644,237 to Eslambolchi et al. (Eslambolchi '237) in view of the admitted prior art. Applicants respectfully submit the claims as presented are novel and non-obvious for the reasons stated below, and that all the claims of the present application are in condition for allowance.

The Eslambolchi '237 Patent

The Eslambolchi '237 patent teaches a method and apparatus for locating a buried cable, using fields created by a conductor in the cable. The '237 patent actually teaches the transmission and reception of two different signals in the cable locating procedure. A general location of the cable is first determined by impressing a high-frequency cable locating tone on the conductor (col. 2, lines 47-58), and receiving an above-ground RF signal generated by that tone (col. 3, lines 9-17).

Once a general location of the cable is determined from above ground, a cable confirmation tone is used to precisely locate the cable. The cable confirmation tone is a low frequency, near DC signal of no more than 5-10 Hz. (col. 2, lines 59-60). An instrument

containing one or more magnetometers such as Hall effect sensors is inserted into the ground to sense the cable-confirmation tone (col. 4, lines 6-13).

Eslambolchi '237 does not teach measuring any voltage near the cable. Instead, a magnetic field generated by the confirmation tone is detected.

Obviousness Rejections

To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. M.P.E.P. § 2143.03 (citing In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)). Applicants assert that the claims as presented are patentable over the cited reference because several limitations contained in the claims are not taught or suggested in the art of record.

Independent **claim 26** requires "at least one voltage probe." Applicants submit that the Eslambolchi '237 patent does not teach any voltage probes. At most, that reference teaches megnetometers, such as Hall effect sensors. Those sensors do not measure voltage.

Because Eslambolchi '237, in combination with the admitted prior art, does not teach all the limitations of claim 26, Applicants submit that that claim is patentable over the cited art. Applicants further submit that **claims 27-30 and 32**, also rejected as obvious, are patentable at least for the same reasons by way of their dependence on claim 26.

The Examiner has rejected **claims 38 and 40** as obvious. Applicants submit that the base claim 34 of those dependent claims is now allowable in view of the accompanying terminal disclaimer, and that claims 38 and 40 are now therefore allowable because they incorporate the limitations of the base claim.

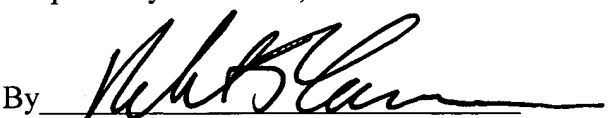
Claim 42 requires the step of "displacing a voltage probe along the cable while maintaining it adjacent the cable." Applicants submit that the Eslambolchi '237 patent does not teach a voltage probe, as noted above, and that claim 42 is patentable for that reason. Applicants further submit that the magnetometer of Eslambolchi '237 must be successively inserted into the earth at several different locations in order to locate the cable (col. 3, lines 59-62). Because measurements are taken underground, it is not possible to displace the probe "along the cable while maintaining it adjacent the cable," as required by claim 42. For that additional reason, Applicants submit that claim 42 is patentable over the cited art. Applicants further submit that **claims 43-46**, which depend from claim 42, are patentable for at least the same reasons.

Conclusion

Applicants therefore respectfully submit that claims 20-46 are now in condition for allowance, and earnestly request that the Examiner issue a Notice of Allowance.

Should the Examiner have any questions regarding the present case, the Examiner should not hesitate in contacting the undersigned at the number provided below.

Respectfully submitted,

By 

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Date: 8/18/05